

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE: FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1789.—Vol. XXXIX.

LONDON, SATURDAY, DECEMBER 4, 1869.

{ STAMPED .. SIXPENCE.
{ UNSTAMPED, FIVEPENCE.

Original Correspondence.

COAL-BREAKING MACHINERY.

SIR,—In reply to a letter in the Supplement to last week's Journal, signed "Jones and Bidder," in reference to my patent for breaking down coal by hydraulic power, I beg to state that the illustrations as exhibited in the Journal of Nov. 20 of my machines are correct representations of instruments made under my patent of 1867, and subsequent patents.

I have not repeatedly failed in my trials to bring down the coal, as stated by Messrs. Jones and Bidder, upon the authority of some unknown person. All I can state is that failure with my instruments have been the exception, and that I have never abandoned my machine of 1867. I should like to call Mr. Bidder's attention to the meeting of Civil Engineers that he refers to, where I publicly stated that I had (before attending that meeting) brought down 7 tons of coal in a 5-ft. seam, in one operation, and I have since brought down more than double that quantity at one fall.

At the meeting of Civil Engineers referred to above I exhibited illustrative drawings of my machines, made long before I ever heard of Messrs. Jones and Bidder having anything to do with coal-breaking machines. On those diagrams are shown the tension bars (without which it is impossible to make a machine according to my patent of 1867) and fluid reservoir: and at the request of the President of that meeting, I explained, by the aid of my diagrams, the action of the pump and fluid reservoir. I can only add (not knowing Mr. John Jones in the matter) that I have before called Mr. S. F. Bidder, junior's, attention, by letter, to my specification of 1867.

Blaine, near Tredegar, Mon., Dec. 1.

J. GRAFTON JONES.

IMPORTANT TO COLLIERS OUT OF WORK.

SIR,—I have just received the following despatch from General W. J. Palmer, director and treasurer of the Kansas Pacific Railway Company:—

"*Sheridan, Kansas, Nov. 5.*—There will be a fuel famine in Kansas this winter for want of coal miners. Can you send us a body of miners at once? If special arrangements are not made they will not get enough miners in Kansas and Colorado for two years to come."

Last September I visited the coal mines near Denver, and the colliers were then making actually \$25, or 3l. 15s., a day. Here, then, is a grand opening for an energetic body (say) of 50 or 100 men to start at once for Kansas.

Let the miners of some district combine amongst themselves at once, and send a representative to the office of Mr. Gilead A. Smith, Bartholomew House (opposite the Bank of England), London, who will, in this special emergency, send them direct from Liverpool to Kansas City for 10l. a head, including 80 lbs. of baggage. Also letters of introduction will be furnished to the parties who will direct the colliers to the mines where their labour is so much needed; and a special agent of the Pennsylvania Central Railroad will meet them on landing at New York, and see them safely on their journey, free of charge. In conclusion, may I add that I have no doubt but these colliers will make at least from 1l. to 2l. per day at once. The names of Mr. Gilead A. Smith (who is the representative in Europe of so many of the large western railroads) and my own are sufficient guarantee for the bona fide nature of this communication.

Hertford-street, May Fair, Dec. 1.

WILLIAM A. BELL.

ON PREVENTING COLLIERY EXPLOSIONS.

SIR,—For some time past I have been fully convinced in my own mind that if the knowledge we are already in possession of was strictly and practically carried out every day in our coal mines explosions are things that might be numbered with the past. I speak from practical experience, having for some years been officially connected with one of the most fiery, if not the most fiery, mines in the British empire, and not a single life or a pennyworth of property has been destroyed by explosions. But some may say—How do you know but that an explosion may happen any day? To which I reply that, if the same rules of management and strict discipline be carried out in the future as has been done in the past, no explosions will happen.

As it is the duty of everyone to do all they can to save life and property, I will give my views on the best methods of preventing explosions. All naked lights and shot-firing should be strictly forbidden. No one should purchase or own the lamp they use: if men buy their own lamps they will most likely get an inferior article. No one to take lamps home, or have anything to do with cleaning them. I speak particularly on this point, and for this reason:—I have known workmen to take their lamps home, and put the gauze in the fire until it was red-hot, on purpose to burn the oil off. Now, any one must know that, however good the wire that the gauze is made from, by burning it becomes so brittle as almost to crumble in pieces by its own weight. All lamps should be cleaned with flint dust at the colliery by men appointed for that kind of work. A man should be appointed to strictly examine every lamp that a workman has been using, and to report if he finds any marks upon them. No workman should be allowed to put his lamp upon the floor, nor should he be allowed to have his lamp placed anywhere within the swing of the pick.

No fireman, deputy overman, or any other official should be allowed to have a key to unlock any lamp with. To some this may seem strange, and they may ask, "If the officials are not to be trusted, how are we to carry on the work?" My reasons for not allowing officials to unlock the lamps are these:—In every fiery mine lamps only ought to be unlocked at certain fixed places, where the intake air is travelling before it has gone through any workings, and boys or old men ought to be stationed at these places on purpose to relight the lamps. Now, if officials are allowed to have keys, and either they or some workman with whom they are friendly should be without a light when they were a thousand yards from the point where it is lawful to relight their lamps they will be apt to say "We are a long way from the place where we can get this lamp relighted; there is no one here but ourselves, so we will relight it where we are," and they do relight it. I speak from what I have known to take place; it grows into a habit. Some day they are in the act of relighting their lamps where they should not do, and an outlay of gas takes place, or a fall of roof in the goaf, which drives the gas upon their naked lights, and we know the result. But if the official had not been put in possession of a key they would have been compelled to go to the proper place to relight the lamps. No workman or any official should be allowed to take either pipes, matches, tobacco, or cigars down the pit. I

have known men make clay pipes on purpose to smoke with. Every workman at a fiery mine should be informed that he must allow his clothes to be examined at any time when any official, along with another man, has any suspicion or reason for so doing.

Some will say remove all the gas out of the mine, and then you will not need to carry out all this strictness. To which I reply that to remove all the gas out of a fiery mine is simply impossible. I have seen places in a mine quite clear, and in two minutes after filled with gas from an outburst that has taken place in the floor. But these outbursts of gas do not always take place as soon as the coal is removed. Large feeders of gas have been known to break out of the floor a long time after the coal has been removed. I have known these feeders of gas to be lighted, and burn for years. Some time since I was informed by a mining engineer that he knew one of these feeders that was lighted more than thirty years ago, and that it was burning yet. I have no doubt but that in every fiery mine feeders of gas break out in the floor of the goaf long after the coal has been removed, and continue to give off large quantities for years, and no one connected with the mine knows anything about it. I have no doubt but that many an explosion has taken place from this cause, and no one has been able to say where the gas came from. Every fiery mine may be considered as a huge gasometer, and ought to be treated with as much care and caution.

In conclusion, I will say carry out strictly and abstractedly the rules here laid down. Carry into your works the greatest possible amount of pure air. Divide or split your air upon the most approved plan; use the best safety-lamps; carry out the strictest discipline. Do these things continuously daily and hourly, and explosions will soon be counted as things of a past age.

Ashton-under-Lyne.

G. ADCROFT.

VENTILATION OF COAL MINES.

SIR,—Ventilation may be defined to be sweeping off deleterious gases as they are emitted from the coal and accompanying strata, the effect of which is that all the workings are quite free from any accumulation of gas, the quantity of air for ventilation being proportioned in a great measure to the emission of gas. Where the excavated parts are filled up again with debris from the mine there is not, as a rule, any danger of gas lodging, and the other parts requiring ventilation are confined to the working places. In some cases places are left standing unfilled and abandoned; these should be ventilated with as much care as the working places. Where the workings are not at all filled up, and the strata above is allowed to fall, the falling is often accompanied with emission of gas, which will be found lodged in the cavities, or goaves. These goaves are of great extent in collieries of long standing, and are so inaccessible to ventilation that they are difficult to deal with in that respect. One means of operation is to have an air-way at the highest edge of the goaf, into which the accumulated gas may naturally discharge itself; the lower part of the goaf is supposed to be void of gas, and that it rises continually up to the highest part, where it issues into the air-way designed for its reception, and from whence it will be carried off direct to the upcast shaft. It is quite possible to effect the same object by means of small fans exhausting gas at the highest points of a goaf, when a special air-way cannot be formed in the proper position. When a mine is constantly drained of its gas in this systematic manner there can be little danger of an explosion. From St. Etienne, in France, we hear of an explosion, on Nov. 22, whereby five men were burnt, two of them fatally. The explosion was caused by a block of coal falling on a safety-lamp, and breaking it, so igniting the gas. There can be no surprise at such occurrences when men are set to work in a magazine of explosive gas, without regard to mine ventilation, as appears to have been done in this instance. Another case in point, which was tried at Tipton on the same day. Four men were burnt by an explosion, caused by using naked lights instead of safety-lamps, contrary to orders. The chartermaster of the colliery, probably knowing they were in proximity to an accumulation of gas, had given them special instructions as to using lamps. It is a question whether the chartermaster or the men were most to blame in this case, as the rules of ventilation require that gases should be carried away in every place accessible to it, so as the working places shall be in a fit state for working and passing therein.

Having endeavoured to explain the method of keeping the mine workings clear of gas, the first requisite being an abundant supply of air; this is to be constantly registered by an anemometer in the different ways to which it is distributed. The water gauge will indicate any restriction in the air-ways to the passage of air; where the water gauge shows so much as 2 to 3 inches there must either be extensive workings to cause so high a column, or the air-ways require enlarging to diminish the resistance. Examples of air-ways of large size as principal returns have lately been given in my Notes on Coal Mining. The minor returns discharge into one main return, where the roof is well secured; and in other cases two or more main returns are adopted. It is contrary to the principles of ventilation for the main horse-road from the pit to be the principal return for a mine; on the contrary, this should be the intake air-way, and the return an air-way set apart for the purpose; but we have noticed collieries having returns on the reverse principle.

These suggestions, if carried out, we doubt not would have a good effect as remedial measures, the supply of air being arranged in the way indicated, this supply extending to every part of the mine, the anemometer and water gauge being used as tests, showing the results obtained from the ventilating power. The Government, no doubt, are willing to promote as far as possible the object in view, and to aid in carrying out any improvements that would give additional security to the workers in mines. Naturally, mine proprietors should be expected to adopt safe and approved methods in managing collieries, seeing that accidents often entail heavy expense and extra cost on working the coal; but in many cases this does not hold good, and cannot be relied upon. So far as these suggestions may be deemed of value, it would be expedient to have Government officers to see that such measures for preventing explosions are properly carried out, by making periodical visits to all coal mines.

Among recent improvements, having an important bearing on safety in coal mining, may be noticed the increasing use of machines for ventilation, more particularly the Guibal fan; also the hydraulic coal-breaking apparatus, from the perfecting of which we may predict the doing away with the use of powder underground, and rendering important service in getting coal, with less risk of accidental explosion. I might refer to other recent colliery explosions, where the suggestions I have named for preventing them would have forcible application. The Hendreforgan Colliery, in the Swansea valley, is

stated at the late enquiry after the explosion to have had an insufficient quantity of air for its ventilation, and the arrangements for its distribution were defective; the absence of any system of ventilation was evident, and the mining practice was not at all abreast with the times. The means of safety are nothing more than using appliances that are now well known, and putting the ventilation of mines on a proper system, to be observed by everyone.

Nov. 30.

M. B. GARDNER.

THE WELDING OF RAILWAY IRON.

SIR,—My last paper on this subject, which appeared in the Supplement to the Journal of Nov. 13, contained a few random selections concerning the causes chiefly detrimental to the proper cementation and amalgamation of this class of iron. It seems strange, indeed, to read the confession of any gentleman having the extensive privileges, experience, and influence that has fallen to the lot of Mr. E. Williams, who comes forward and blandly tells us that he is utterly powerless to give a fagot of railway iron so welded that the public may place implicit confidence in it for the safety of their lives and property. It has generally been conceived that the difficulty of amalgamating railway iron has been far less than that experienced with regard to iron of such qualities as that manufactured by Mr. Hill for the Great Eastern cable, whence it may be concluded that he thoroughly comprehended all the properties of his iron, and this, of course, was the key to his success, for the severest test has not discovered a single fracture in the welding; but, perhaps, strains and friction might have quite a different effect upon the various qualities of iron, the weight of a heavy locomotive engine being more powerful and effective in shaking abroad the various layers originally composing the rail, in consequence of the vibration, than even the strain of the big ship on the cable in a gale of wind.

In none of my readings have I been able to discover any conclusive proof as to which is the element in wrought-iron that gives it the power of welding, but some experiments of the French metallurgists seem to show that the property is due to the presence of ammonia. Of course, no iron can be welded unless accompanied by fluid cinder, but experience has long ago demonstrated, in my opinion, that the presence of fluid cinder in puddling is by no means an indispensable auxiliary for this purpose, for frequently I have had nearly 2 in. of the same on the bottom of the furnace; yet even with this large supply the malleable iron has most obstinately refused to cling together so as to form the required balls, and frequently I have been compelled to tap this cinder in order to get a cinder which would both oxidise and correspond with the quality of the iron being operated upon, and that, too, at the expense of the yield. The same thing frequently happens with grey pig. The cinder is of so vile scouring a nature that the puddler, ere it boils at all, is compelled to tap it, for in all probability if he did not he might as well attempt to make brickbats cling together.

So, again, it frequently happens that when iron of this quality is re-heated as a pile for the mill the cinder does not act as a cementing agent or an auxiliary, but leaves the layers of the pile in streams almost as fluid and subtle as quicksilver, and cementation is physically impossible, whatever may be the heat or treatment to which it is afterwards submitted. And more especially the part of the pile nearest the flue where the oxygen has the greatest influence in quickening the action of this fluid silver the layers of the pile, notwithstanding the temperature, are as loose as the leaves of a book. It has oftentimes occurred to me that it must be a monstrous piece of folly and incapacity that the making of iron of this quality should be persisted in through arranging the elements to make war and havoc on each other instead of acting harmoniously together. By amalgamating into a purely homogeneous mass ironmasters endeavour to excel each other in the production of a metal upon which the life and safety of millions depend. We read of blast-furnaces 75 ft. high producing large quantities of molten iron, but how the increased produce is to be rendered either marketable or trustworthy is an unsolved problem. Let any person conversant with the iron manufacture watch the difference that a healthy and unhealthy cinder produces on the formation of the grains when approaching malleability in the puddling-furnace. In good iron containing a proper cinder it assists the grain to swell out and become fibrous instead of contracting its growth, thus enabling the iron to become a soft and pliable mass, fit to be moulded into any shape or form, and will retain this quality in all future stages of operation. The cinder will stand the same temperature as the iron, and even higher, if necessary. It will stand such a temperature that amalgamation is certain, in consequence of the elements composing the mass. But railway iron is produced at random in many places, so that when subjected to the necessary temperature for balling it loses the most essential and important elements that should give it firmness, homogeneity, and commercial value—its cementing matter. The grain of such iron has never developed itself to the maturity it should have done had all the elements agreed with each other. The cinder that should give it the power of amalgamating has long ago run away to the flue end ere the iron was half-hot, leaving the dry pile a prey to the flames. The oxygen now makes sad havoc with the metal, and thousands of tons of iron are thus annually consumed from this cause alone.

Now, Sir, I conceive it possible that, as the late Mr. Hill has already done, iron can be produced, with a little more care and competence, so that it could be welded and amalgamated as solidly and firmly as the Bessemer ingot of rail steel. But when we find our various ironmasters, with all the recent discoveries in metallurgical science and chemistry, still continuing to use such vast quantities of sand in heating, it must lessen our surprise at the difficulty of amalgamating railway iron—or, indeed, any other species of iron; more especially when we witness this siliceous matter becoming so fluid and scouring in the heating-furnaces, leaving all the rails that are so frequently cut up and re-worked out of the question. Our ironmasters are extremely loose in the conditions they should impose on the operative, in consequence of the uncertain state of the fusions from the blast-furnace. Now, the late Mr. Hill held in his own hands all the conditions to be necessary to secure the production of a sound amalgamated and trustworthy article, for he so alloyed his iron that he knew with certainty how long each charge required to become perfect.

In the first stage of the oxidising process during the last 20 years, scientific men have suggested a vast number of artificial fluxes, in order to improve and correct the differences of these uncertain fusions. Some of these I have had to deal with personally, and, indeed, I have found some of the inventors of these fluxes have displayed such arrogance and haughtiness toward the operative tha

there has been much difficulty in testing the real merits of the invention, and frequently, to my own knowledge, by way of retaliation, the inventor has been cheated, as he deserved, before his eyes out of the merits of his invention. Whilst we are referring to this subject, perhaps it might not be out of place to single out one of these fluxes, as being far superior to any other I have seen, for the purpose of enabling decarbonised iron to boil, or to decompose all the oxidised particles that are formed during the cooling of decarbonised pig. All competent iron-workers fully comprehend the difficulty attendant upon endeavouring to fuse the surface of decarbonised pig, for the ingredients, when exposed to the atmosphere, have an action nearly equal to that in the puddle-furnace, hence the surface becomes semi-malleable, and it is a matter of importance both to masters and workmen, as to how it can be fused. Carbon has invariably been found to solidify the various substances composing our globe, and this seems a very useful physical law, for from the ever-active and penetrating power of oxygen it is probable that if carbon were not more powerful in its protection by its solid hold of various substances, our globe might ere this have become a heap of dust. The artificial flux which I noticed to have such practical effect in decomposing the crust of iron was sulphure of iron and oxide of lead.

Most of our original ironmasters held as essential both the quantity and quality of the fluxes that were intended to give the required mechanical action to all kinds of iron in puddling, so that a uniform article was the unerring result of these conditions, but at present the question of fluxes is left to the will or caprice of the operative, who has to use his own judgment and discretion, which are frequently of a limited character.

During the late depression in the iron trade there have been very audible complaints respecting the very keen competition felt in this country, and our inability to compete with those in the same trade on the Continent; but I fancy it will do but little to maintain our position as ironmasters, or to give railway iron consumers a bold and positive confidence in our productions, when a man in Mr. E. Williams's position seriously informs the public of his inability to produce a railway bar free from fault or reproach. I consider his declaration a serious blow at one of the most staple trades of the country. Are not the workmen of the British empire equal to those of the Continent in capacity and skill in their various handicrafts? Only let us have a fair stage and no favour, as well as the opportunity to develop our intellectual faculties, and the workmen will soon restore that public confidence in railway iron which it is now sought to destroy. All the conditions of boiling all kinds of iron should be made plain to the operative—the length of time required, and the necessary temperature for the iron under treatment. I have been informed by some of the first puddlers who went to France in order to instruct the French operatives in that branch that for seven years he never knew any one charge of pig to boil at a higher or lower temperature than another; any irregularity in these matters were sufficient to destroy its whole marketable value, and all reliance upon its amalgamation. My remarks may not be really applicable to every locality of our iron-making districts, neither has Mr. E. Williams informed us to what locality he can most attribute his non-success in these matters.

I have no wish to be regarded as a fault-finder, but the foregoing remarks are simply the results of a little study and ocular proof that, when submitted to rational dissection, leads me to the belief that ironmaking in many localities is founded and carried on upon very loose and uncertain conditions, and that speculative theorists are leading us a long way astray. I think, then, it is only right and just on the part of the operative class to solicit their present employers to retrace their steps, and follow in the same groove as enabled our Crawshays, Guestes, and Hills to be so much respected for their skill in producing a really reliable quality of metal. In a future letter I will say something respecting the coal best suited for cementing rail iron.—*Merthyr Tydfil, Nov. 29.* A PUDDLER.

RICH SILVER ORE IN CORNWALL.

SIR,—The attractive, if not amazing, announcement of "pure silver ore which gave an assay of 3253 ozs. of fine silver per ton" reminds me of an assay of gold by an eminent firm here in London, whose certificate showed some 3000 or 4000 ozs. of gold per ton. This certificate, together with the assurance that it referred to a fair sample of the vein, tempted me to accept the offer of its management, although the mine was on the other side of the globe. When I got there I found, unfortunately for me, that in robbing this nest they had robbed this *quasi* gold mine of all the gold it contained. How far the analogy holds good I do not pretend to determine. I have simply stated facts, which the prudent can appreciate. Will the parties interested in this tetrahedrite guarantee one ton of it in the sett; if they will I must admit them to be very bold adventurers. 14, *Englefield-road, N., Dec. 1.* W. EATHORNE GILL.

ON THE ASSAY OF SILVER ORES—No. V.

SIR,—Galena (sulphide of lead) is a mineral which, as regards silver, is of greater importance in this part of the world than any other. Almost all the silver mined in Great Britain is got from galena. It is often called silver-lead ore, even when the total amount of silver yielded to assay is under 0.01 per cent.; 10 ozs. per ton, or about 0.03 per cent., is considered a good yield. Many people believe that all galena contains a certain amount of silver. This is, doubtless, true; there never was a sample of lead ore, of sufficient size, out of which a trace of silver might not be got. But if asked whether all galena contains silver in *workable* quantity, I must reply at once—"Certainly not; the silver may be replaced by iron, copper, or zinc. English galena will show to assay from 0.02 to 0.03 per cent. of silver; Scotch ore from 0.03 to 0.06 per cent.; that of the Hartz from 0.03 to 0.05 per cent. Some American samples have yielded as little as 0.003 to 0.005 per cent., others from 0.1 to 3 per cent. In Tuscan there is galena which contains a little antimony, and from 0.3 to 0.7 per cent. of silver. Galena in contact with silver ore is, of course, likely to be much richer still.

I have recently assayed several samples of galena from a district adjoining the Hartz, none of which yielded more than 0.003 per cent., and was, consequently, as far as silver is concerned, of very slight value, whilst some lead ore from Saxony, assayed a little while ago, showed upwards of 2 per cent. of fine silver. I find that the presence of antimony is not always a sign that the galena is rich in silver; nor does the existence of small facets on the angles of the crystals lead to more certain conclusions, as some have supposed.

It has been asserted by more than one eminent writer that the galena of the so-called "primitive formations" is much richer in silver than that found abundantly in the ancient limestones. But the numerous lead mines of Dacaria, which are very rich in silver, occur in transition limestone, resting upon "primitive" rocks, and the galena of the black transition limestone of Fahlun, in Sweden, is also very rich in silver. There may, however, be some truth in the notion that galena in the more modern strata is more or less poor.

At Joachimsthal a curious mineral product, which yields to assay 2½ per cent. of fine silver, and 5 to 10 per cent. of nickel and cobalt, is regularly worked for the precious metal. Up to 1855 the ore was roasted, and then digested with dilute sulphuric acid, at the moderate heat of 40° Centigrade, in order to dissolve the cobalt and nickel. The silver was then extracted by nitric acid, precipitated as chloride by means of common salt, and the chloride reduced by old iron. Since the year 1860 another plan has been adopted, which, I am told, answers better. The ore is roasted with common salt, to form chloride of silver, and a jet of steam is driven into the roasting-ovens. The soluble chlorides thus formed are carried off by washing, and the chloride of silver is next dissolved by means of ammonia, or better still, with hyposulphite of soda. When the latter is used the silver solution is precipitated by sulphide of sodium, which gives all the silver as pure sulphide of silver, easily smelted, and regenerates the hyposulphite of soda necessary for the next operation. Some such process as this might answer in our south-western counties, through which, as I have already hinted, Nature has strewn silver in a very general manner.

Before concluding this letter, let me state that I have remarked, not without surprise, how fond some of your anonymous correspondents seem to be of attaching my name to the "Old Treburgett Mine," and then asserting that I make *covert attacks* upon it. "Observer"

has even had the bad taste to allude to an old discussion in the *Chemical News*, relative to the death of two poor students, who might have risen to be greater chemists than himself. Now, Sir, all this is very contrary to my feelings, and would lead to the belief that I have a bad opinion of that part of Cornwall as a mining district for silver, whereas I have stated in my letters that it is, perhaps, the most argentiferous region of all England, and I have long entertained hopes of seeing silver ores form one of its grandest features. Whether these hopes will ever be realised or not I cannot say, but I have little doubt that both in Cornwall and Devonshire much really valuable silver ore has hitherto been neglected, from pure ignorance, or badly worked, from want of sufficient knowledge.

T. L. PHIPSON, Ph.D., F.C.S.,
Late of the University of Brussels.
Analytical Laboratory, Putney, S.W., Nov. 28.

ROYAL SCHOOL OF MINES—ANDREASBERG.

SIR,—In the Supplement to last week's Journal I see that Mr. Warrington Smyth mentions that the celebrated mine of Sampson, in Andreasberg, had ceased to be worked owing to the great depth and to the comparative small value of the lode at the 412 fathoms level. Since Mr. Smyth's visit, last July, the works have been continued, and in the beginning of August a splendid discovery was made. The lode, which was before from 10 to 15 in. broad, spread out to over 2 feet, with about from 3 to 4 in. of pure ruby silver. I was visiting the mine with the Government Inspector of Mines, Dr. Koch, when the first kibble of this ore was brought to surface; there was somewhat over 2 cwts. of it, and a fairly-taken sample gave 51 per cent. of fine silver. The ore was most beautifully crystallised, and the greater portion will be sold as specimens, as a higher price is thereby obtained than by sending it to the smelting-works. If this continues the Sampson will again take up its position as one of the most productive of the Hartz mines.

Bensberg, near Cologne, Nov. 29.

COPPER MINING—REDUCED DUES.

SIR,—A few weeks ago expectation ran high as to a better price being obtained for copper, but the great drop in the standard last week appears to drown all hopes for the present of an advance. Whether the serious fall in the quotations of tin has had such a depressing influence on copper is the question, and appears to upset any calculation as to the future in the price of this metal. Until the exports of copper from Chili and other large producing countries lessen in quantity I much fear that no material change can be looked forward to, and better prices may loom at a great distance. The deep mines in every country, we are informed, have hard struggling to support themselves, and the managers are put to their wits' end to meet the out-goings. A reduction in the royalty or dues is the only chance that British mines have in future, and without this acted upon but little capital to invest in our mining pursuits can be obtained, and British mines must greatly suffer.

With large deposits of copper found in distant lands near to the surface, of high percentage of metal, European miners have little chance. But when new mines are discovered, containing rich quality ores, the case is different; these chances are, however, few and far between, partly owing to the high rate of royalty demanded by some landowners, and the great difficulty in obtaining sets of promise from others, and whether the standard for copper is 100%, or 140%, that is the question, with respect to the balance-sheet at the end of the quarter. The principle of live and let live answers best for all in the long run. Most things in this world find their level, ups and downs ever did occur in all countries, and in mining pursuits more particularly.

Mining should be considered as much a mercantile pursuit as any other. If a merchant buys in a dear market, how can he compete with those who buy on better terms elsewhere? This reasoning will equally apply to royalty or dues paid to landed proprietors, and much of their future wealth will result from their so-called liberality; but in reality they will discover that a very high authority said that a liberal man deviseth liberal things, and that by liberal things he shall stand. Therefore, liberality is a corresponding blessing to all.

Nov. 29.

A. BENNETT.

LEAD MINING, AND LEAD SMELTING.

SIR,—Having heard, through the medium of the Journal, such fabulous reports of the great exploits in smelting iron with an improved Scotch hearth at Lead Hills, in Scotland, I am anxious to satisfy myself as to the correctness of the statement. So far as I can learn no such hearth ever really existed but in the imagination of the writer of the articles; and I have thought it worth while to ask your correspondents for the North of England or for Scotland to make such enquiries as will enable them to disabuse the public.

Would any of your readers, therefore, be good enough to inform me where a continuous lead-smelting hearth may be found in regular and satisfactory use, what ore of average quality is smelted therein weekly, and what are the results as to the produce of lead and consumption of fuel? What I mean by a continuous hearth is one that can be worked the week through without the slightest cessation, and where the lead is always of its natural blue-white colour. This would be lead smelting in perfection.

Your correspondents of the different districts would confer a favour on the lead-smelting community if they would report on lead as they do on iron-smelting improvements; as also would Mr. Hunt if he give similar statistics of lead establishments to those of iron. We have a deal of foreign lead imported into England; but we know little about the various parts, methods, and extent of works where it is produced abroad, which are becoming such formidable rivals to us at home. Information of this kind would interest the general reader as well as those specially engaged in lead mining and in smelting.—*Heatham, Nov. 29.* LEAD.

MINING IN THE ISLE OF MAN.

SIR,—In last week's Journal an article appeared headed "Mining in the Isle of Man," which is made to have special reference to our Douglas Head Mine. I am sorry your correspondent (who is unknown to the company or myself) did not before writing the notice communicate with me, as it would have prevented his falling into several errors, which materially detract from the value of his remarks. These being of no consequence to us as a company I should not seek to trouble you upon the subject, but that whilst evidently desiring to do us full justice for energy and perseverance he has (I feel sure unintentionally) done the Crown and its officers great injustice in supposing that difficulties are placed in the way of intending investors obtaining "takes"—such is not the case. I am justified by experience in stating that respectable applicants meet with fewer difficulties in dealing with the Woods and Forests upon the subject of "takes" and "leases" than they do with private mineral proprietors; nay, I can go further and say that during many negotiations respecting mining leases in Wales and elsewhere I never received such prompt and business-like attention as that given by the officers of the Woods and Forests.

Your correspondent is correct in stating that the Douglas Head Company have had difficulties to contend with, but they were quite exceptional, and arose from circumstances which could not affect any other sett in the island. Thus some 20 years ago, in compliance with the prayer of a petition from certain parties, who stated that the operations would be detrimental to Douglas as a watering place, the *license* then in existence was withdrawn, but more recently a *lease* was granted, with a verbal stipulation that our operations on surface should be conducted out of sight of the town, in strictest compliance with which we have for four years endeavoured to accomplish our object by driving adits from the sea coast.

At the expiration of this time we were, unfortunately, too well able to demonstrate that though our adits, if continued, would cross-cut the entire sett, still (principally from causes which it was impossible to have foreseen) it would be a work too tedious for ordinary human patience, whilst at the same time the "eye of the mine" could be attacked with little if any injury to the landowners, and none to the town of Douglas. The representatives of the Crown being satisfied on this point, they withdrew the restriction, and granted permission to adopt the course we should (if unrestricted) have adopted years ago, and which we have every confidence will, within a reasonable

time, make Douglas Head one of the most profitable mines in the kingdom, its natural facilities are so great. The circumstances referred to have, as a matter of course, been the cause of immense loss to this company—enough to have totally dispirited most companies; but we are now sanguine that speedy success will reward our patience, and are satisfied fully that the action of the Crown and its representatives was dictated solely by a desire not to prejudice the supposed interests of the landowners or of the town of Douglas, which they now see will in reality be furthered by the employment of labour as the mine is developed, whilst so little is it likely to be an eyesore to visitors to the island, that those not previously aware of the position of our works would have difficulty in finding them.

WILLIAM C. BEW, Sec.
Colonial Buildings, Dale-street, Liverpool, Nov. 29.

DON PEDRO NORTH DEL REY—THE RECENT MEETING.

SIR,—I am pleased to find by the report of the proceedings of our company's meeting, as contained in last week's Journal, that our able Chairman, Mr. Henry Haymen, afforded such re-assuring explanations as to the successful future of our already remarkably successful enterprise. As a not inconsiderable shareholder, I personally thank Mr. Haymen for the commendable course he has ever adopted of submitting to the shareholders all information received from Brazil, but at the same time the professional detractors have still much greater reason to thank Mr. Haymen for thus acting, for without this pabulum these vultures would be, as it were, bereft of their carcass. Mr. Haymen properly remarked "that he had nothing whatever to do with the speculators, who had every right to form their opinion, as had the *bona fide* shareholders." If the speculators chose to sell shares which they had not got, and then endeavour to force the legitimate shareholders to dispose of their interest, they had (Mr. Haymen imagines) a perfect right to do it; and if shareholders were absurd enough to play into the speculators' hands by being caught in the speculators' traps, Mr. Haymen nor anyone else were to blame, except those who were entrapped.

As on many former occasions, Mr. Haymen reiterated his unabated conviction that the results from Maquiné, although perforce variable, would yet be far greater than they ever had been; and seeing that hitherto Mr. Haymen's anticipations as to prospective results have been more than realised, we are in justice bound to respect his *dictum*—that there is a magnificent future still in store for Don Pedro.

If anything were needed to show the absolute necessity on the part of the Chairman, of a foreign mine more particularly, being thoroughly *au fait* with every detail connected with the enterprise, it was most certainly testified at the recent meeting, for it was too apparent that the minute details communicated to the shareholders in Captain Treloar's and Mr. Symon's despatches had been mis-read, and consequently misapprehended; and had it not been for the extremely lucid explanations afforded by Mr. Haymen, who not inaptly termed them an "explanation of explanations," this misapprehension would, no doubt, develop itself until it had assumed indefinite proportions with which the most steadfast believer in the undeveloped resources of Maquiné would find it difficult to successfully cope. Thanks, however, to our able and pains-taking Chairman, this has now been entirely averted, but such supplemental data, so to speak, has been submitted, which should prove an important auxiliary in directing the judgments of shareholders as to the future of Maquiné.

Nov. 30.

A LARGE SHAREHOLDER.

MINING IN COLORADO (U.S.).

SIR,—Since writing you last I have the pleasure to state that mining is looking up here, and, indeed, showing every appearance that in another spring it will be in a prosperous state. The erection of a new furnace for separating gold and silver from galena has drawn the attention of many gentlemen from the East, and it is to be hoped it will answer, as it has been long looked for in Colorado. The mountains abound with lodes which contain gold, silver, lead, and blende, and rich near the surface; but there are no persons here who understand its separation. A number of lodes have been laid open, and proved to be rich near the surface; but when found to contain much galena they are considered of no value, and abandoned. Mining is carried on by a few persons, not by public companies as in England and many other places. If a joint-stock company were formed with a small capital to work some gold and silver lodes here, and send the ores to England to be separated, in my opinion Colorado would be found to be one of the best fields for mining in America. Every man that has a lode which contains gold sends the ores to the stamp-mill, for the purpose of quick returns, and which they get every week. Most of the gold lodes are intermixed with silver, blende, galena, and yellow and grey copper ores of a high percentage, and when those ores are taken to a stamp-mill the silver, copper, and blende are washed away, and entirely lost. Now, had those mines been in the hands of a joint-stock company that could send the ores to England much larger profits could be made, as the lodes contain sufficient copper ores to pay the freight. I am now making arrangements to send a box of ores, both gold and silver, to your office, for the inspection of parties who may wish to call and see them.

I remember a few weeks ago seeing a letter in the Journal from Prof. Hill, of Colorado, respecting his furnace, in which he stated that he has two furnaces fixed, and one was then out for want of ores. I can only say that I am well posted in those mountains, and feel justified in saying that the California Mine—one mine alone—can supply more ores daily by twenty-five men all told (including underground and to grass) than Mr. Hill can smelt in his furnace, and if twenty furnaces were erected in Colorado there would be sufficient ores for twenty more. No one can form any idea of the lodes and ores now visible near the surface, within a few feet, unless they were to see them, and all containing gold, silver, galena, blende, and copper ores.

All the mines here are paying well; but the California Mine is at present paying the largest profits of any in the mountains—their net profits exceeding over \$1000 per day, by twenty-five men at work. They have ground laid open and sufficient ores now in sight to continue these profits for twelve months, and they have resumed sinking their shaft, as the lode appears to be richer going down.

Central City, Gilpin County, Nov. 6. THOMAS JENNINGS.

WEST CALIFORNIA (Colorado).—We are sinking our shaft on Jennings's lode, below the 80 ft. level, as fast as possible, with a full crew of miners day and night, with the intention of getting as deep as they are in East California without delay. In East California their returns are very large—their net profits have been for many months over \$1000 a day, and the mine still improving. Our shaft is on the same lode, within 45 ft. of their main shaft, and the same character ore: the lode in our shaft is 4 ft. wide, with a leader 1½ ft. 6 in. wide, intermixed with silver, copper, lead, and blende. This ore we sell to the smelting house at \$110 per ton; the remaining part of our lode we send to the stamp-mill. The mill ore produce 14 ozs. of gold to the cord of stuff—1 cord is 8 tons. Had our leader of ore, which is mixed with copper, lead, silver, and blende been cleaned the same as they dress their ores in England, and sent to Swansea, we could make much larger profits; but when our mine is further developed we hope to do it, as there is no one here who understands the separation of gold, silver, copper, and lead from one another.

Nov. 6.

THOMAS JENNINGS.

THE QUEBRADA COMPANY.

SIR,—Much has been, and more, doubtless, will still be, said and written touching this singularly-managed company since its formation. Shareholders have spoken, and, indeed, clamoured, committees have been formed, pamphlets have been circulated, letters have been, and are I notice still being, published in the Journal relative to the past, present, and future. The letter which I read in last week's Journal signed "J. M. R." is much to the point; but, with your permission, I will offer a few remarks, and ask a few questions, having as their object the common weal of all interested.

Firstly, then, in the event of this railroad being made what is likely to be the amount of traffic? Is there any chance of there being traffic from sources independent of the products from the estate, mines, &c.? If so, whence will it come? I ask this latter question, since I am reminded of Mr. Salmon's project of "tapping the traffic at Palma Sola." What does this mean? The place, as I understand it, is in the centre of a vast forest, and many miles away from human habitations. So what traffic can there be, unless, indeed, Mr. Salmon expected it to come through the forest from St. Felipe; this appears to me a very remote chance. However, presuming that this is a correct surmise, what goods are likely to be sent, and what will be the approximate tonnage? Then, again, what amount of mineral and vegetable products (in tons) may reasonably be looked for from the company's own works?

All these and many more queries arise in one's mind whilst dispassionately exercising the proposed railroad scheme, for the railroad has to be paid for out of some people's pockets. The directors mentioned nothing at the last meeting of the kind of railway which they had in contemplation, nor of the cost; and I should like to be informed on both these points. Suppose we allow that this line, being only a mineral one, will cost say \$4000, a mile, say 60 miles, for what has been done will probably have to be done over again, this shows our expenses

to be, in this one item only, 240,000. Will the traffic from our own and extraneous sources ever pay a dividend upon this outlay? This question, last but by no means least, is of such financial importance that I look forward with eager curiosity to its solution by wiser heads than mine.

There are, no doubt, several methods which can be tried with the view of raising the further capital required; but the question is, which plan is most likely to succeed—for instance, by debentures, by preference shares, or as before, by a re-construction of the company? The confidence of the public in debentures has been so much shaken of late that I should very much doubt, even if guaranteed by the enormous value of the mines, the shareholders, still less the general public, would be induced to apply for them, unless offered at such a rate that the prospect of shareholders receiving any profit would be entirely removed. In addition to this, if they be, as I am informed they were when last issued, mortgage debentures, then I can foresee that the debenture-holders will, in all probability, become, and that at no distant date, the owners of the whole property. I hope, therefore, the issue of debentures will never be thought of for a moment. Again, preference shares—can these be placed? Considering the present price of shares I much doubt if it be possible, unless, like the debentures, they be issued with some heavy preference.

But, lastly, re-construction. It may seem almost bordering on the ridiculous to advocate what is, in reality, a third construction or formation of the company; but this appears the wisest and the most feasible plan for raising the required capital, especially when we remember the ease with which the money was obtained on the last occasion. Without recourse to the disastrous alternative of borrowing at fabulous rates of interest, we shall thus retain exclusive proprietorship, and, by so determined an effort, ensure to ourselves a handsome return from the undertaking, which has borne the semblance for a long time past of merely a vast mirage.

ANOTHER SHAREHOLDER.

NEW QUEBRADA COMPANY.

SIR,—There is an old proverb which holds that when things are at their worst, they must mend; may we tired out and disheartened shareholders of the New Quebrada Company (Limited) buoy ourselves up with the feeling that this adage is applicable to our case? We are told that we have the equivalent of the estate, we are also aware that we have still about 20,000, as assets; what our liabilities are at this date our directors can, no doubt, tell us. What is, then, our exact position? We must either wind-up, as it seems to me, or be guided by the men whom we ourselves have chosen to direct our affairs; it is of no use to put our hand to the plough and look back; it is absolutely essential that in whichever direction we move that step shall be decided and unflinching; up to this time we have been like a house divided against itself, and it is little short of a miracle that the fabric has escaped the perpetual shocks to which it has been subjected by conflicting opinions, disputes, bickerings, animosity, and the like. The whole history of the Quebrada Company's affairs is unworthy of us and of our characters as sensible, clear-headed business men; but though we have failed in the past, let our future repair the wounds already inflicted, which, though deep, are not yet incurable under skilful treatment. Our directors have told us their scheme, which "A Rich Shareholder," in the Journal of Nov. 13, gives it as his opinion should have been adopted six years ago. I fully concur in this, not disguising from myself the fact that this is assuredly our last chance—that of raising a further sum of 250,000, upon debentures for the purpose of constructing a line of railway to the mines. I do not agree with those of my brother shareholders who affirm that this is simply throwing good money after bad; as things stand, by winding-up we lose all; by following the course so strongly advocated by our directors, I do most sincerely believe that, humanly speaking, success is sure; but nothing can be done unless we all, with one voice and one heart, contribute to the one common interest of all, and to so act in unison as to insure the long-looked-for wish of an—

EVER EXPECTING SHAREHOLDER.

[For remainder of Original Correspondence, see this day's Journal.]

MINING IN AUSTRALASIA—MONTHLY SUMMARY.

PROFITABLE COPPER MINING IN SOUTH AUSTRALIA.—The Moonta Mining Company eighth annual report does not read as if copper were only 77¢ per ton. The net profit realised on the mine during the six months ended Sept. 20 was 24,805¢. The gross quantity of ore raised was 10,426 tons, against 8216 tons in the previous half-year. The quality averaged 17½ per cent, but the depreciation as compared with the percentage of former yields is only nominal, as a considerable quantity of washings of higher class ore has been shipped recently. The reduction of the average is solely due to that cause, and the productiveness of the mine is unimpaired. The estimated value of the past half-year's produce at the low rate of 81.16s. per ton amounts to 91,748s. This would not have allowed a wide margin for dividends had not the cost of production been materially diminished. It has averaged 67.8s. 3d. per ton, and the total working expenses have been 66,933s. The net profit has thus been 24,805s. 9d. per ton. The total quantity of ore comprised in the operations of the past half-year was 15,532 tons, fully 5000 tons having been on hand in March last. The total shipments to England during the half-year have been 7789 tons of ore, and 230 tons of fine copper. The quantity which passed through the smelting works at Wallaroo was comparatively small—970 tons. The sales in the province aggregated 2189 tons, and the quantity on hand on the 20th inst. was 4583 tons. The sales during the half-year have thus been somewhat in excess of the produce, and the actual revenue of the company some thousands of pounds larger than the nominal return from the mine. The process of raising and copper ore sold as above were 37,023s. out of which, after meeting working expenses (66,893s.), there remained nearly 32,000s. for the two dividends (Nos. 26 and 27) paid during the half-year.

At the present time the assets of the company are 91,777s. In excess of its liabilities—a sum not much short of 300, per share of the nominal capital. They comprise 77,014s. for buildings, machinery, and stores; 38,955s. for the ore on hand; and 20,597s. for sundry debtors. The total amount of the liabilities is 45,665s. Capt. Hancock's report on the workings enumerates 24 shafts, the three newest—Ferguson's, Prince Alfred's, and Beidom's—being from 12 to 15 fms. from the surface. Such a report as this, published in the face of such a depressed market as has prevailed during the period to which it refers, forms a conclusive test of the capabilities of the mine, and the ability of its management. Every dividend paid under present circumstances must represent at least double the amount of work which the original dividends did, and yet the ratio of the past half-year (two 5s. dividends) shows about 15 per cent. on the current value of the shares.

AUSTRALIAN MINES.

YUDANAMUTANA (Copper).—The superintendent (Adelaide, Oct. 12) states—With regard to the mine works, following up the remarks in my last despatch under this head, I have to report that labourers and surface miners' wages are reduced to 30s., and owners' account underground men to 34s. Every department is in excellent working trim. Wages, salaries, and general expenditures are now reduced to the lowest figures. Fine rains during the past 12 weeks have removed all apprehension of a drought, and nothing now is wanted but a good rise in the price of copper. Capt. Terrell reports, under date Oct. 12: Bitman Mine: No. 3, or Main Shaft: The branch of ore in this winze, north of this shaft, is much the same as when I wrote last.—No. 1 Winze: In driving in to the south of this winze (35 fms. level) we cut a very fine lode of ore. This lode came out from the footwall of the winze No. 1; it is quite a distinct lode.—No. 3 Winze: The lode of ore I put the men on to sink, as mentioned in my last, is still holding good. The winze is down 4¼ fms.; lode still improving. The stopes south of No. 1 winze, below the 10, as well as the other places, are looking just the same as last reported. Ore raised in the month, 403 tons; ore smelted, 403 tons; copper made, 45 tons 15 cwt.; dispatched to Port Augusta, 45 tons 6 cwt.

WORTHING.—Thomas Prisk, Oct. 8: Bremer Mines: The following is my report for the past month:—We have commenced to sink the engine-shaft under the 93 fms. level; the ground continues good; price for sinking, 55¢ per fathom. We also commenced to drive east from Bonduy's lode, on the floor, at the 93; price for driving, 67¢ per fathom. In the 93, north end, the lode is about 2½ ft. wide, good dredge-work; present price, 167¢ per fathom. This appears rather hard, but we had the same shoot of ground in the 83, so that we hope to be through this and get into soft ground, and a good lode, as above. In the 93 south we look better than we have done since we left the 63. We are driving in the horse through good branches of ore, which will pay for driving. We have holed Moor's winze north. This winze has gone down through good lode of ore and is now at the 83 fms. level, where we have put the men to sink the winzemen to rise in the back of the 83 north, to meet the winze in the bottom of the 63, where we have every reason to expect a good lode the whole distance, as we have a good lode both in the winze and rise; price for rising, 57¢ per fathom. We have two men driving north at the 83; this end has been idle for several months for want of air. At present the lode is small, but we hope this will not continue far, as the lode continues wet. We have had some trouble in the 63 north of the long winze, the lode being about 30 fms. down, but we hope now we have got the main part of it, as it appears to improve every foot we drive; price for driving, 81¢ per fathom. We have two men driving at the 73 south, with a view of opening out the south part of the mine again, if possible. We are constantly cutting through small branches of ore, and letting down a great deal of water, so that I am of opinion the lode is ahead of us. The stopes in the back of the 73 are nearly finished. When done we shall then have nothing doing south but the 73 end, above the 83; therefore, the main part of the mine is now to the north. The stopes at present are looking well through the mine. The two stopes that are at work at the 93 are set one at 21.2s. per fathom and the other at 21.10s. We are getting on as fast as possible with the water-wheel for the engine to do away with boys. We hope to effect a great saving in the dressing. Ore raised for the month 250 tons, of the usual quality. Hands employed on the mine, 142.

PORT PHILIP (Gold).—Oct. 9: The quantity of quartz crushed during the four weeks ended Sept. 15 was 4970 tons; pyrites treated, 674 tons; total gold obtained, including that from pyrites, 1692 ozs. 12 dwts., or an average per ton of 6 dwts. 19½ grs. The receipts were 4385s.; payments, 4178s.; profit, 2257s.; added to which was last month's balance of 889s., thereby making an available balance of 2446s. The amount divided between the two companies was 2500s. The Port Phillip Company's proportion being 1250s. The balance of 1461 was carried forward to next month's account. The return for the two weeks ended Sept. 29 is as follows:—Quartz crushed, 2459 tons; pyrites treated, 29 tons; total gold obtained, including that from pyrites, 622 ozs. 12 dwts., or an average per ton of 5 dwts. 7 grs. During the third week 1289 tons of quartz were crushed, but the yield has not been ascertained. Remittance, 1500s.

AUSTRALIAN UNITED (Gold).—Mr. Kitto, Fryerstown, October 11, writes—"I have to report commencing to crush at the Duke of Cornwall Mine with 12 stamps, at 3 P.M., on Sept. 16, and up to the 30th everything went on capitally. On that day, however, Mr. Rowe (engineer) reported to me a fracture in the axle; during the following night it parted quite in half. Luckily I had a duplicate on the ground, and was enabled by working in the Sunday to recommence crushing on the evening of the 1st instant. The immediate cause of the breakage was the wedging of the sides of the cam too tightly. We crushed 200 tons of rather hard stone previous to the breakage, which gave 2341.2s. worth of gold, at an expense of 1291.18s. 4d., leaving 1041.13s. 8d. profit. Since then 140 tons have been crushed, but I shall not clear off until just before next mail leaves. The sale of the gold obtained from the 200 tons above referred to, together with 42 ozs. 14 dwts. of gold previously in hand, being together

100 ozs. 10 dwts. 12 grs. of rough, or 98 ozs. 14 dwts. 6 grs. of melted gold, realised 2321.12s., being 77s. 9d. per oz. The whole of the machinery for treating the pyrites is now in an advanced state of completion, so much so that no further delays need be anticipated." From the Central Mine the captain (Holman) reports to Mr. Kitto, dated Oct. 8, that all the works in connection with the mine have been satisfactorily started, and he writes—"From the results obtained by our neighbours, the London and Melbourne (immediately adjoining the Central), that company had the handsome yield of over 50 ozs. of gold per week for the past three weeks, and driving direct east for the Park lead, which is yet several hundred feet to the east of them. Both these guano are certain to come through this (the Central) ground, besides several tributaries to the west and south-west of us, worked by private parties, and yielding gold remunerative to them. For instance, close to us, direct west, a party of six men, before we started pumping, were actually obliged to abandon their claim, owing to the influx of water, but now are left quiet, and for their last week's work obtained the satisfactory result of 7½ ozs. of coarse gold; this week they expect to double the amount, and the run is coming straight over the western reef towards us. Then, to the south of us is the Lord Malmesbury, which, although not at work, has been proven to be a payable claim, if judiciously worked. We are draining this mine also. To the south-west again, is the Herclonia Company, knocked off owing to the large body of water there struck, and now running over the collar of their shaft at surface, and which has yielded the most gold of any claim in the district, according to the ground worked, the average being ½ oz. of gold per square foot; this is also tending towards us. Taking the nature of present leads and bearings, I am candidly of opinion that we shall have a first-rate paying claim."

ENGLISH AND AUSTRALIAN (Copper).—The manager (Port Adelaide, Oct. 13), writes—"The quantity of coal at Port Adelaide was 1171 tons, besides a quantity in course of delivery." In reference to the Port Works, the manager writes—"Ore is gradually accumulating again on our floors, and we have a large supply of copper ready." Since the date of last advice a shipment of 100 tons of copper has been received.

SCOTTISH AUSTRALIAN.—The directors have received advices from the general superintendent at Sydney, dated October 8, with report from the Lambton Colliery to October 5. The sales of coal for the month of September were 13,185 tons.

YORKE PENINSULA.—The directors have received advices from the committee of inspection at Adelaide, dated Oct. 6, with reports from the Kurilla Mine to Oct. 11. The following are extracts from Capt. Anthony's report:—"Since my last, dated Sept. 9, I have sunk nearly 1 fm. in Hall's engine-shaft, cut eastern-plat, made and fixed the eastern, and removed the 7-inch lift into the said eastern, to pump the water from the 35 to the 25 fathom levels. I am now preparing a 6-inch lift, to pump the water from the bottom of the shaft to the 35 fathom level. After completing this work, I shall go on with the sinking more rapidly than heretofore. No change has taken place in the state of the lode in this shaft, although the country is softer and more genial than formerly. At Debble's shaft, after driving west about 5 fathoms, and raising about 8 tons of 15 per cent. ore in the back and bottom of the 8 fm. level, I have set it on tribute at 10s. in 17. They are now making more than average wages. I may add that at the water level the green ore is giving place to grey and black oxides and grey sulphure of copper of the highest quality. I am glad that the directors have authorised me to drive the 25, west from Hall's shaft, with the object of draining Debble's shaft of water; this 25 fm. level is now within 10 fathoms of where I expect to effect the drainage, driving at 81¢ per fathom. I confidently hope that this part of the mine will yield an early return, if I can but have the means to develop it for tribute work. All who see it say that such indications must lead to good deposits of yellow ore below. The engine and pitwork are in excellent working condition, and I have two months' fuel on hand paid for.

GERALDINE MINES (Western Australia).—S. Mitchell, Sept. 30: Owing to the greater part of my force being engaged at Mitchell's part of the mine, but little has been done in sinking under the 33 fathom level, at Todd's shaft; however, it suffices to show a slight improvement in the lode, as I predicted in my last, now worth fully 3½ tons per fathom. Nos. 1 and 2 stopes, south-west of this shaft, are worth 3 and 4 tons per fathom; that in the back of the 33, 2 tons per fathom. Mitchell's shaft is down 19½ fms. from surface; this shows good progress; the lode has varied in value from 4 to 6 tons per fathom. The 17, north-east of this shaft, is now 6 fms.; average value of the lode 3½ tons per fathom. The stopes in the back of this level is worth fully 4 tons per fathom. I may add that so far this part of the mine is turning out better than I anticipated. During the past four weeks about 80 tons of galena have been raised, and 99 tons 13 bags carted to the port; making a total thence of 189 tons 8 bags, and 500 tons at Champion Bay. Our machinery, in fact everything in the mine, continues to go on satisfactorily.

FOREIGN MINING AND METALLURGY.

The administration of the Belgian State lines has published a defence of its proceedings in the matter of the arrangements made by it for the transport of coal. It will be remembered that great complaints have been made of late as to an alleged want of coal trucks. It appears that out of 8845 vehicles of every kind possessed by the State system for the conveyance of goods 5627 were reserved exclusively for the coal traffic. Of these 5627 wagons 1585 were capable of carrying 5 tons each, 3936 could carry 10 tons each, and 106 could carry 15 tons each. Thus the whole coal plant of the State system was equal to the conveyance of 48,875 tons, and with these resources it was calculated that the management could move and deliver 244,375 tons per month, or 732,825 tons per quarter. During 1867 the State system conveyed 2,792,685 tons of coal—700,398 tons during the first quarter, 523,629 tons during the second quarter, 719,262 tons during the third quarter, and 847,395 tons during the fourth quarter. It will be seen that it was during the last quarter of the year only that the plant devoted to the conveyance of coal was insufficient for the purpose, as there was a deficit of 114,570 tons in that period in the carrying resources of the concern. As we are now in the fourth quarter of 1869 the embarrassments of 1867 are now being reproduced—nothing more and nothing less. The state of the Belgian coal trade has not varied; numerous orders have been received at previously indicated prices. It is proposed not to renew many of the numerous contracts expiring with the close of the year except at a sensible advance; this applies more particularly to coal for metallurgical purposes.

The animation which has long characterised the markets of the Haute-Marne district, far from slackening, appears to be increasing; a very satisfactory and regular current of orders is everywhere remarked, and the prices stipulated for by the foremasters are excessively firm. It was thought a fortnight or so since that there were signs of a check in the demand for iron, but a considerable number of new orders have since been received, which have only been accepted with a stipulation for rather remote periods of delivery. This stipulation is not only attributable to the animation in the demand, but it is also due to some of the works having fallen in arrears with their orders, in consequence of a rather protracted drought. Machine iron shares in the generally favourable tone which characterises business in the Haute-Marne. Important affairs are proposed, a fact which denotes confidence in the future; and it is not at all surprising in presence of the favourable aspect of business to see quotations display great firmness at 87. per ton for rolled iron from coke-made pig (we are speaking of large transactions), and 87. 4s. per ton in the case of small current affairs. Iron from charcoal-made pig is also better sustained, in consequence of the advance which has taken place in coke-made pig, and 97. 4s. to 97. 8s. per ton has now to be paid for it. Axes have been in good demand in the Haute-Marne, but hammered irons have remained quiet, notwithstanding the improvement which has taken place in other descriptions. Navigation has been re-established on the Rhemis Canal; we are happy to hear this favourable piece of intelligence, as the long interruption on the canal has occasioned considerable prejudice to some works, by rendering it impossible for them to lay in their supplies of combustible. The advices which reach us from the Meurthe and the Moselle only confirm what we have already stated on the subject of the blast-furnaces, forges, rolling-mills, &c., of that group. Everywhere the greatest activity prevails, numerous orders come to hand, and, unfortunately, there is some want of labour. Deliveries of minerals are also checked and impeded by a want of labour and railway plant. Irons have sold freely in the Meurthe and the Moselle at preceding rates; pig for refining, ordinary quality, has made 27. 15s. 2d. per ton. The foundries of the district appear to be well off for orders for heavy castings, &c. Paris has presented no very striking item of news during the last few days. Iron and castings submitted to octroi duty were imported into Paris for building purposes during September as follows:—Iron, 4203 tons; castings, 1589 tons. In September, 1868, the corresponding imports were 4379 tons and 1763 tons respectively. During the first nine months of this year 101,972 tons of pig were imported into France by warrants, against 70,492 tons in the corresponding period of 1868, showing an increase of 31,480 tons this year. On the other hand, the imports of pig with payment of duties present a considerable diminution this year, having been 3071 tons to Sept. 30, against 14,089 tons in the corresponding period of 1868. As regards iron and plates, the totals stand thus to Sept. 30 in the 10 years:

	1869.	1868.
Imported, free of duty	Tons 44,320	47,330
" for shipbuilding	6,561	8,608
" with payment of duty	3,408	1,745
Total	54,289	57,683

The exports by warrants of pig-iron and plates combined amounted, to Sept. 30 this year, to 138,049 tons, against 109,855 tons in the corresponding period of 1868. The total direct exports of pig-iron, plates

steel, works in iron, &c., were 27,674 tons in the first nine months of this year, against 16,246 tons in the corresponding period of 1868. The imports of minerals into France in the first nine months of this year presented the annexed results, as compared with the corresponding period of 1868:—

Source of supply.	1869.	1868.
Belgium	Tons 99,886	71,114
German Association	71,896	74,089
Spain	79,022	55,343
Kingdom of Italy	46,679	66,036
Switzerland	216	3,195
Algeria	169,558	135,174
Other countries	2,481	640

Total

The manufacture of Bessemer steel rails in France appears to be considerably extending. Thus, in the first half of this year the Terrenoire Forges Company made 13,074 tons of this description of rails, against 5320 tons in the corresponding period of 1868; the Imply St. Seurin Company 4552 tons, against 3121 tons in the corresponding period of 1868; M. M. Petit-Gaudet and Co. 1796 tons, against 2003 tons in the corresponding period of 1868, &c. Including the productions of M. M. Boigues-Rambourg and Co., M. M. de Dietrich and Co., and the Châtillon and Commentry Forges Company, the total quantity of Bessemer steel rails made in France in the first half of this year was 19,755 tons, against 10,562 tons in the corresponding period of 1868. It is probable that the second half of this year will show a still more sensible increase in the production of these rails, important orders having been given out since June by the great French railway companies. The Orleans Railway Company has just ordered from the Creusot Works 2000 tons of steel rails, at 117. 7s. 2d. per ton. The Western of France Railway Company has ordered from the Terrenoire Works 3000 tons, at 117. 10s. 3d. per ton. Water conduit pipes have hitherto been exempted from all duties on entering Paris, but the municipal authorities have just decided that they shall in future be subject to a duty of 19s. 2d. per ton. The Parisian Gas Company has been exempted, however, from a similar duty as regards its pipes. The Eastern of France Railway Company has just let a contract for 1260 tons of iron Vignoles rails, to M. M. Mineur Sons and Wilmet, of Vireux-Mochoin, at 97. per ton; the *cachet des charges* provides for a guarantee of five years. The Creusot Works tendered at 97. 4s., and the house of Wendel at 97. 13s. 7d. per ton.

To pass on to Belgium, we may note that the Great Central Belgian Railway Company has let contracts for 300 10-ton goods trucks, to be delivered in three lots. The lowest tenders were delivered by M. M. Thevenet, of Antwerp, and M. M. Delecoeur, of Morlanwelz. The Russian Government, as has more than once been announced, is making great efforts to reduce as much as possible the importation of metallurgical products into Russia from other countries. A proposal has just been submitted to the Russian Council of Ministers for the establishment in the Bakhmouth district (Government of Catherineopol) of iron works capable of producing 500,000 pounds of rails annually. This establishment would be united by two lines of railway to colliery works, and also to the great Sea of Azoff main line. An official enquiry has been ordered in France into the state of such industries as have raised the most energetic complaints against recently concluded treaties of commerce. The enquiry will, of course, extend to metallurgy.

Copper has, upon the whole, been quiet of late upon the continental markets, upon some of which it has not, indeed, been very well supported. Tin has been generally more or less feeble. Lead has presented little change. Zinc has also maintained previous rates.

FOREIGN MINES.

RHENISH CONSOLS.—George Sweet, Nov. 27: The lode in the sink below the 10 fathom level, on the middle lode at Billebach, is at the present moment looking well, and worth for lead 147. per fathom. No alteration at any other point since my last.—Madonna: The engine is still idle, but by Thursday next the new pump will, I hope, be ready and placed in the shaft, and the engine resumed working. The lode in Reed's shaft is still producing good lead ore.

ALAMILLOS.—Nov. 23: In the 4th level, driving east of La Magdalena shaft, the ground is very hard for driving, and the lode small and poor. There is no alteration in the character of the lode in the 5th level, east of the above shaft. The 5th level, west of La Magdalena shaft, is worth 1 ton of ore per fathom; the lode is very regular, and the level is opening fair tribute ground. The lode in the 6th level, east of Taylor's engine-shaft, has not changed since last report. The 6th level, west of Taylor's shaft, yields ½ ton of ore per fathom; the lode here produces good stones of ore towards the bottom of the level. In the 6th level, west of Taylor's shaft, the lode is still idle, but not enough to value. The lode in the 7th level, west of San Adrián's shaft, is unproductive. The 2d level, west of Cox's shaft, is worth 1 ton of ore per fathom; the lode has fallen off in value since last report. In the 2d level, east of San Victor shaft, the lode has been productive, but it has become poor within the last few days. The lode in the 2d level, west of San Victor shaft, does not wear a very promising appearance, and the lode is small and poor. The 3d level, east of Crosby's engine-shaft, is worth 1 ton of ore per fathom; the lode looks well, and bids fair to improve. The 3d level, west of Crosby's engine-shaft, is worth 2½ tons of ore per fathom; this has opened splendid ground during the month.—Shaft and Winzes: Roas' winze, below the 5th level, is suspended for the present, in consequence of an increase of water.

FORTUNA.—Nov. 23: Canada Inco's: The 110, west of O'Shea's engine-shaft, yields ½ ton of ore per fathom; the lode is small, and the ground hard for driving. The 110, east of O'Shea's shaft, also produces ½ ton per fm.; the lode here is looking a little more kindly than it was. The 100, west of Henry's shaft, is worth 1 ton of ore per fathom. Very good progress has been made in this end since last report, and the lode has been more productive than it is at present. No improvement in the 90, west of Judd's shaft, has taken place since last report. The 80, west of Judd's, is worth 1 ton per fathom; this end still continues to open fairly productive ground. The 80, south of Henry's shaft, is without change. The 50, east of San Pedro shaft, yields ½ ton of ore per fathom; we have a slight improvement in this end, and it looks kindly for further improvement. The lode in the 90, east of Addis's shaft, is small, and the ground hard. The 80, west of Lowndes's shaft, is worth ½ ton of ore per fm. Since last report we have broken some very good lead stuff, and it still looks kindly. In the 80, east of Lowndes's shaft, the ground is hard, and the lode small, but we expect to have a change for the better shortly. The lode in the 70, east of San Pablo's shaft, is small and of low value. The 45, east of San Pablo's shaft, yields ½ ton of ore per fathom. We have resumed the driving of this level, and from what we see in the 30 we hope to open some good paying ground when we get further east.—Shafts and Winzes: Better progress has been made in sinking O'Shea's shaft below the 110 than formerly. Cayetano's winze, below the 50, is worth 2 tons of ore per fathom; the lode has somewhat improved since last report.—Los Salidos Mine: The 100, east of Buenos Amigos engine-shaft, is communicated with the same level driven west from Morris's engine-shaft. The 100, west of Buenos Amigos shaft, is worth 1½ ton of ore per fathom. A great improvement has taken place in this end in the last few days. In the 90, west of the above shaft, no change worthy of notice has taken place since last report on. The 75, west of San Carlos shaft, is worth 1½ ton of ore per fm.; the lode is compact and solid, and is looking better than it was. The 100, east of San Gabriel (now Cox's) shaft, yields ½ ton per fathom; there are good stones of lead in the upper part of the end. The 90, east of San Pablo's shaft, is worth 3½ tons of ore per fathom; the lode has greatly improved in value since last report. The 75, east of San Pablo's shaft, yields ½ ton of ore per fathom; the lode is still large and kindly, but not so good for lead as it was.—Shafts: The lode in Morris's engine-shaft, sinking below the 100, produces good stones of lead ore. In San Miguel shaft, below the 65, the ground is hard and troublesome for sinking. Cox's shaft, below the 90, yields ¾ ton of ore per fathom; this shaft is holed to the 100. Palgrave's engine-shaft, sinking from surface, is still in old men's workings.

LINARES.—Nov. 24: West of Engine-Shaft: The 85 fathom level west of Warne's engine-shaft, is worth ½ ton of ore per fathom; the lode is large and strong, but not so productive as when last reported on. The 85, east of San Francisco shaft, yields 1 ton of ore per fathom; the lode consists of calcareous spar and lead ore. The 55, east of San Francisco shaft, produces 2 tons of ore per fathom; this end continues to open productive ground. In the 45, east of San Francisco shaft, the ground is hard, and the lode unproductive. The 31, east of the above shaft, yields 1 ton of ore per fathom; the lode is small, consisting of quartz and lead ore. The lode in the 25, east of same shaft, is disarranged and poor.—Winzes: No. 170 winze, sinking below the 25, yields 2 tons of ore per fathom; the lode has improved during the past week.—Los Quintones Mine: The lode in the 45, west of Taylor's engine-shaft, is unproductive. In the 45, east of this shaft, the lode is large, letting out much water, and showing indications of improvement. The 32, east of Taylor's shaft, yields ½ ton per fathom; the lode is small, but the ground is easy in this end. The lode in the 83, west of Cox's shaft, is compact and regular, yielding 1 ton per fathom. The lode in the 32, west of San Carlos shaft, is large and strong. The 32, east of San Carlos shaft, is worth 1 ton of ore per fathom; the lode here is of a very promising character.—Shafts and Winzes: Taylor's engine-shaft, sinking below the 45, yields 1 ton of ore per fathom; the men are making good progress in sinking this shaft. In San Carlos shaft we have removed the plunger-lift from the 22 to the 32. The lode in Agustín's winze, sinking below the 32, is large, yielding occasionally stones of lead ore.

VAL ANTIGORIA.—Thomas Roberts, Nov. 21: We have communicated the adit south on No. 1 lode to No. 2, and the greatest part of the ground through the adit to receive the ropes has been taken down, and have commenced fixing timber to carry the gear, calculating this week to put in place two of the shafts for the whin in the adit. The 20 end north, on No. 2 lode, is letting out a little water. The stopes in back of the 20, on No. 1 lode, are worth at present 2½ tons of ore per fathom, and the stopes in back of the 30, on this lode, ¾ ton per fathom. Nothing new in the cross-cut west.

[For remainder of Foreign Mines see to day's Journal.]

Mr. Rutter, a Cornish mining engineer, with a party of 18 men, sailed from Southampton by the Royal Mail steamer on Thursday, for the purpose of draining the silver mines of Cerro de Pasco, in the republic of Peru.

London: Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their offices, 26, FLEET STREET, E.C., where all communications are requested to be addressed.—Dec. 4, 1869.